2005

MONTANA ARMY AVIATION NG OPERATIONS PLAN

COOPERATING AGENCIES:

MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION
MONTANA NATIONAL GUARD
USDA FOREST SERVICE REGION: 1

MONTANA INTERAGENCY NATIONAL GUARD HELICOPTER FIREFIGHTING PROGRAM

APPENDICES:

MONTANA INTERAGENCY MILITARY HELICOPTER FIRE FIGHTING PROGRAM

2004 OPERATING PLAN

I. INTRODUCTION

This operating plan (OPLAN) implements the agreements documented in the "Cooperative Agreement" (Appendix A), among the Montana Department of Emergency Services (DES); the Montana Department of Natural Resources and Conservation (DNRC); US Department of Agriculture Forest Service (USFS); and the Montana National Guard (MTNG). Nothing in this OPLAN conflicts with the cooperative agreement, the Department of Defense policy, or National Guard service related regulations, directives or instructions.

II. OBJECTIVES

The DNRC, USFS routinely employ helicopters for fire suppression when fighting wild fires. MTNG helicopters are tasked to support these agencies in fire suppression operations during emergency support conditions as authorized per National Guard Regulation, 500-Afl 10-8101, Military Support to Civil Authorities.

This OPLAN is a single source document that identifies the mutual duties, responsibilities, and expectations of the various fire fighting agencies, and the units of MTNG, when tasked to support wild fire operations. This OPLAN standardizes MTNG helicopter fire fighting equipment and aircrew training, evaluations, and currency requirements. It specifies the process to activate MTNG units and provides fire fighting managers with detailed information about aircraft, and staffing capabilities. It also outlines the responsibilities and training requirements of the fire fighting agency personnel.

III. POLICY

MTNG aircraft and resources will normally be activated after all state agency, federal and contract call when needed (CWN) helicopters, by type, have been employed. The MTNG helicopter fire fighting capability

is a supplemental emergency resource employed when suitable civilian contract helicopters are not available.

IV. SAFETY

Historically during critical emergency activity, agencies within the state of Montana look to the MTNG. This military organization has vital rotary wing aircraft that provide a wide range of services. During activation of the MTNG , safety shall be the utmost priority. All agencies have their own standard operating plans integrating safety and risk management. Caution will be exercised to ensure that the most restrictive policies are adhered to. Aviation team members have the responsibility to identify the agency specific policies to be followed. If conflicts are evident, flight activity will cease until a clear resolution is attained. The intent of all agencies involved shall be to provide safe and effective resource utilization during activation of MTNG assets. The final authority for the safe operation of the aircraft is always the responsibility of the pilot in command (PC).

A. Incident and Accident Reporting

Should an aviation incident or accident occur, the MTNG and the Agency controlling the incident must follow their respective reporting procedures. All aviation incidents and accidents will be reported immediately to the state and or federal officials as applicable.
Upon arriving at a fire incident it shall be the responsibility of the Agency Aviation Military Liaison (AAML) or the Military Helicopter Manager (MHEM) to ensure that the crash /rescue plan, medivac procedures and notification procedures are in place prior to allowing any MTNG aircraft to operate on the incident. In the case of dispatch to an initial attack (IA) incident the AAAML/MHEM must be aware and plan for safety, advising MTNG crews when unsafe situations or activities are occurring. The AAML/MHEM may, at anytime, cease MTNG operations when they feel that it is unsafe. It is the responsibility of the AAML/MHEM to initiate all fire fighting agency incident reports and to ensure that all incident and accident reports are accurate.

B. Safety Equipment

1. MTNG crews shall adhere to applicable military regulations governing the wearing, use, and maintenance of aviation life support equipment (ALSE).

2. AAML/MHEM shall wear the following clothing and equipment during flight.

a. Authorized flight helmets.
b. Authorized Nomex flight suit or wild land fire fighting Nomex.
c. Leather or Nomex gloves.
d. Leather boots.
e. Crew tether harness when appropriate.
f. ID Tags.
g. Cotton underwear.

1. In addition to the above equipment, all crewmembers shall be required to wear approved personal flotation devises (PFD) during over water operations.

V. RESPONSIBILITIES

A. Command and Control

All assigned MTNG crewmembers and attached fire fighting agency personnel will comply with all operating procedures established in this OPLAN.

All MTNG aircraft flying on an Agency wildland incident shall have a copy of the most recent authorization letters (Appendix I).

Only trained and qualified fire fighting personnel will fly on MTNG military aircraft to, from, and on operational flights. The IC can authorize Aerial Observation missions for the Adjutant General and his staff to ensure interagency cooperation and information sharing.

All agencies that are part of the Cooperative agreement will maintain aircrews and equipment capable of responding to an emergency activation during the fire season in accordance with this OPLAN.

B. MTNG Support Facility

The MTNG will supply helicopters from the following facility:

Helena; Army Aviation Support Facility (AASF) -
UH-60A UH-1/H CH-47D (future ACFT – 2004/05)

C. Support Facility Working Group

The DNRC and the USFS will maintain a Support Facility Working Group in conjunction with the MTNG flight facility.

Prior to the start of the season, this working group will be responsible to insure that:

1. The fire fighting equipment at the facility is inventoried, tagged, inspected and ready for deployment.
2. MTNG aircrew and agency personnel are trained to OPLAN standards and that it is properly validated and documented.
3. Coordination between the MTNG facility personnel, aircrews and agency personnel is maintained.

D. MTNG Maintenance and Support

Additional MTNG maintenance and support elements can be expected to be deployed in conjunction with aircraft and crews. The exact number of personnel is dependent on agreements separate of this OPLAN but generally the types of support are as follows:

1. Each Incident Site

Maintenance personnel can be expected to vary depending on the number of aircraft and type assigned. Maintenance requirements for MTNG aircraft in the field are generally parallel to the civilian equivalent with 1-3 additional mechanics needed to conduct daily and periodic maintenance (see para. H for specific staffing requirements). Aircrews should not be expected to perform maintenance on aircraft in violation of crew rest requirements. The ordering agency should plan for the support of additional maintenance support personnel.

Whenever MT ARNG aviation assets are requested to an incident the MTNG will normally activate a Military Liaison Officer (LNO) and when necessary additional administrative support staff. This staff will work with the agency AAML on the incident.

2. Support Facility

When the MTNG activates aircraft, the Aviation Battalion will also activate additional operations and administrative staff to provide a communications link and coordination for aircraft and flight crew records. These MTNG personnel may remain at the facility and may or may not deploy to the incident.

E. Rules and Regulations

MTNG aircraft operate under procedures contained in Department of Defense Flight Information Publications and flight rules contained in Army and Air National Guard and State regulations. Specific paragraphs in Federal Aviation Regulations Part 91, that do not exempt military aircraft or flight crewmembers, apply to flights in the National Airspace System. Other applicable regulations or procedures may be more restrictive but under no circumstances may they be less restrictive.

This OPLAN establishes operating procedures that MTNG aircrews, USFS and DNRC personnel will operate under when activated to support this plan. Nothing in this plan, or communicated by other means, authorizes MTNG aircrews to violate existing Army or Air Force rules, regulations, instructions, or guidance.

F. Crew Endurance

1. National Guard flight crews will operate shifts of 14 hours on duty and 10 hours off duty. Flight crews are limited to eight hours of flight time in one duty day.
2. Pilots and crewmembers accumulating 36 hours in any six consecutive days shall be off duty the following day, with a 42-hour maximum in any 6-day period.
3. Pilots or crewmembers shall not work more than 12 consecutive days without 2 days off. **(Note: these two days off are with pay.)**
4. Duty time includes flight time, ground time of any kind, and standby or alert status at any location.
5. A day off must not be less than 24 hours and the pilot or crewmember shall not be subjected to call-up for duty during this period.

G. Military Staffing

The Officer in Charge (OIC) is the individual designated by the MTNG as the overall commander of the aviation assets regardless of the number of aircraft. The OIC will normally be an aviator with flying duties but will have at a minimum the following responsibilities while assigned to an incident:

Has overall responsibility for all operations of MTNG aviation assets on an incident.
Supervises aircraft and aircrew scheduling.
Supervises maintenance operations/logistical support

Enforces crew endurance policies Coordinates with the agency AAML Manages Personnel Assignments
Coordinates with MTNG higher headquarters
An Air Mission Commander (AMC) is designated when two or more aircraft are tasked to perform a single mission on an incident. The AMC has overall responsibility for planning and completion of the assigned mission from the initial air mission brief to the back brief or debrief upon mission completion. The AMC makes the determination whether or not the mission can be completed as briefed and briefs the aircrews on the assigned mission. There may be times when the AMC and OIC may be the same individual.

A MTNG Military Liaison Officer (LNO) will be dispatched when two or more aircraft are sent to the same incident. The LNO will be responsible for the coordination between MTNG and agencies on all issues. The LNO answers to the OIC. The LNO will be stationed at the Northern Rockies Coordination Center in Missoula.

H. Aircrew Staffing

UH-60 Cell

1st Aircraft	2nd Aircraft	3rd Aircraft
PC	PC	PC
PI	PI	PI
CE	CE	CE
CE	CE	CE
67T		67T
TI		
77F		
77F		
93P		93P
9 Personnel	4 Personnel	6 Personnel

UH-1H Cell

1st Aircraft	2nd Aircraft	3rd Aircraft
PC	PC	PC
PI	PI	PI
CE	CE	CE
67N		67N
TI		
77F		
77F		
93P		93P
8 Personnel	3 Personnel	5 Personnel

CH-47 Cell

1st Aircraft	2nd Aircraft	3rd Aircraft
PC	PC	PC
PI	PI	PI
FE	FE	FE
CE	CE	CE
67U		67U
TI		
77F		
77F		
93P		93P
9 Personnel	4 Personnel	6 Personnel

I. Time schedule for Deployment

To complete all the necessary preparations to configure the aircraft and notify the flight crews, 48 hours notice will normally be required prior to deploying for wildfire fighting operations. The AAML or MHEM will, in conjunction with the OIC, use the Incident Mobilization Checklist (Appendix D). The following is the normal sequence of events that occur prior to MTNG unit deployment to an incident.

1. Army National Guard

Flight crews identified, called in briefed and flight planning completed.
Fire fighting agency AAML/MHEM identified and linkup established.
LNO identified/assigned to Northern Rockies Coord. Center
Radios installed, frequencies assigned and checks completed.
Water buckets checked and loaded.
Maintenance support kit loaded.
Aircraft painted IAW Appendix D, including ACFT number.
Hoist installed (if required).
Aircraft preflight by flight crew.

VI. ORDERING

A. Montana Department of Natural Resources (DNRC) request for Montana National Guard (MTNG) assistance are placed through the Department of Emergency Services (DES) per the provisions specified in the cooperative agreement.

B. The USFS, Northern Region (USFS/Region 1) and the United States Department of Interior, Shall make all requests for MTNG assistance through the DNRC, who then places the request with DES and then DES assigns.

C. PAYMENT

MTNG aircraft are paid on an hourly basis. The most current rates are published in the Interagency Incident Management Handbook in Chapter 50, Cooperative Relations, NRCG Supplement. Payment will be recorded on the USDA Forest Service, Flight Use Report, FS-6500-122. The white copy will go to DNRC FMB via the AAML, pink copy will stay with the fire and the yellow copy will go to the AAML. The 6500-122's will be turned into the Finance Unit, who in turn will forward the copies to the Department of Military Affairs. Military Affairs will bill to DNRC. The Department of Natural Resources and Conservation will then bill the Federal partners for applicable charges.

VI. AIRCRAFT

A. MTNG Aircraft numbering and Painting

All MTNG aircraft will be painted in accordance with the numbering sequence and high visibility schemes (Appendix D) as depicted in this operations plan prior to deployment to an incident. If for some reason an aircraft is deployed without being painted it will not be allowed to engage in flight operations on the incident until it is properly marked. The number painted on the aircraft will be the aircraft tail number with the type aircraft prior. (UH-1H will use U, UH-60 will use B, and CH-47 will use C.) (Example, UH-60 Aircraft 26136 will be B136)

Aircraft will retain the same number until released from all fire activity. When an aircraft is released from an incident and is no longer available for assignment, the paint shall be removed as quickly as possible. It will be the joint responsibility of the requesting agency and MTNG facility to ensure the aircraft are cleaned. If necessary this may entail hiring of contractor services to remove the painted markings. Cleaning of aircraft is chargeable to the incident.

The AASF shall be responsible to number aircraft prior to deployment and shall keep on hand the necessary materials. The approved paint is **CRAYOLA FLORESCENT TEMPURA**, item #21-00188(a) through (f). Paint should be applied in full concentration, do not dilute. Any paint used other than the approved tempera will damage the infrared paint on the aircraft.

B. UH-60A Blackhawk

1. General Description

The Army National Guard UH-60A Blackhawk is a twin turbine engine, single rotor helicopter. The primary mission for fire suppression activities are the transport of firefighters, supplies and equipment, and water bucket operations. The aircraft has an external hook for sling load operations. the aircraft has a maximum seating capacity for 17 personnel but normally come configured with three seats for the crew, one for the helicopter manager and 11 seats for passengers. The aircraft may be configured for search and rescue operations with a rescue and /or medical transport kit capable of carrying six litters with the passenger seats removed. During personnel transport one crewmember may remain on the ground, providing one additional passenger seat. Aircraft is deployed with a 660-gallon collapsible Bambi bucket.

2. Performance Data

The following data is based on a fuel load of 1300 pounds, Aircraft Torque Factor (ATF) of 1.0 power available and was computed using the UH-60/A Operators manual.
The Aircraft will be configured and performance calculated with the following:

3 crewmembers (600 lb.)
Fuel burn rate (950 lb./hr)
1300 lbs. of fuel on board = 1 hr of flight time + 20 minutes of reserve
Average take off gross weight of 13,650 pounds
OGE hover
10 seats available
A firefighter is calculated at 200 lb., with equipment

Pressure altitude/temp	Cargo load	Passengers
5000/25C	4793	10
5000/30C	4593	10
5000/35C	3801	10
6000/25C	4168	10
6000/30C	3893	10
6000/35C	3191	10
7000/25C	3523	10
7000/30C	3054	10
7000/35C	2555	10

C. CH-47D Chinook

The Chinook is a twin turbine engine, tandem rotor helicopter. The primary mission is the transport of firefighters, supplies, equipment and bucket operations. The aircraft has three external hooks for sling load operations. The aircraft has a maximum seating capacity for 36 personnel. Normal configuration is four seats for the crew, one for the helicopter manager, two seats removed for equipment storage, leaving 29 seats for the passengers. The aircraft is deployed with either 2000 or 1300 gallon collapsible buckets.

4 crewmembers (800 lb.)
Fuel burn rate (2000 lb./hr)
6500 lbs. of fuel on board = 2.5 hrs + 20 minutes of reserve
Average take off gross weight of 31,000 pounds
OGE hover
34 seats available
A firefighter is calculated at 200 lb., with equipment

1. Performance data

The following planning data is based on a full load of fuel (6600 lbs), a maximum passenger capacity of 32 seats available and Out of ground Effect (OGE) hover power. A firefighter is calculated at 200 lbs.

Pressure altitude/temp	Cargo load	Passengers
5000 ft/25C	18,000 OGE / 18,000 IGE	32
5000 ft/30C	17,000 OGE / 18,000 IGE	32
5000 ft/35C	15,800 OGE / 18,000 IGE	32
6000 ft/25C	16,200 OGE / 18,000 IGE	32
6000 ft/30C	15,000 OGE / 18,000 IGE	32
6000 ft/35C	13,800 OGE / 18,000 IGE	32
7000 ft/25C	14,200 OGE / 18,000 IGE	32
7000 ft/30C	13,000 OGE / 17,800 IGE	32
7000 ft/35C	11,800 OGE / 16,400 IGE	32

D. UH-1/H HUEY

The UH-1/H is a single engine, single rotor system helicopter. The maximum gross weight is 9500 pounds The primary mission for fire suppression activities are the transport of fire fighters, supplies and equipment, and bucket operations. The aircraft has an external hook for sling load operations. The aircraft has a maximum seating capacity for 13 personnel but normally come configured with three seats for the crew, one for the helicopter manager and 9 seats for passengers. During personnel transport one crewmember may remain on the ground, providing one additional passenger seat. Aircraft is deployed with a 180-gallon collapsible Bambi bucket.

1. Performance Data

The following data is based on a fuel load of 1000 pounds. The power available and was computed using the UH-1/H Operators manual.
The Aircraft will be configured and performance calculated with the following:

2 crewmembers (400 lb.).
Fuel burn rate (600 lb./hr).
800 lbs of fuel on board = 1 hr of flight time + 20 minutes of reserve
6000 LBS empty weight
Average take off gross weight of 7200 pounds
OGE hover
10 seats available
A firefighter is calculated at 200 lb., with equipment

Pressure altitude/temp	Cargo load	Passengers
4000/25C	1000	5
4000/30C	600	3
5000/25C	600	3
5000/30C	300	1
6000/25C	400	2

VIII. AGENCY STAFFING

The cooperating fire fighting agencies have established two positions for the purposes of this program: the Agency Aviation Military Liaison (AAML) and the Military Helicopter Manager (MHEM). These positions are based on agency management personnel recommended in the National Interagency Fire Center's, Military use Handbook dated April 1996.

The AAML/MHEM will use the Montana Department of Natural Resources and Conservation 1500 Aviation manual, or the Interagency Helicopter Operations Guide (IHOG) as a directive and be knowledgeable of this OPLAN pertinent to the assigned mission. They will also ensure that the MTNG helicopters, personnel, and equipment assigned will be utilized in the safest, most effective and suitable manner. The AAML/MHEM shall be assigned as appropriate by the MAC group in order to manage the mission. A CWN qualified Helicopter Manager or Helicopter Boss (type IV, IC or arduous physical fitness level not required) can be assigned to perform the AAML/MHEM duties and responsibilities when directed to do so.

A. Agency Aviation Military Liaison (AAML) role and responsibilities:

1. The AAML is directly responsible for supervising the agency aviation personnel assigned to the military aircraft.
2. Lead person to make contact with the assigned Guard facility to obtain the aircraft tail numbers and ensure that the aircraft, paint scheme, and crews are equipped and ready to respond to the incident.
3. Insures that MHEMs are assigned to helicopters prior to arriving at an incident.
4. Obtains and provides fire order information relative to the incident to the assigned MHEM, National guard crews and support personnel.
5. Insures that the necessary fuel, transportation, communication, lodging, and all other logistical support required to perform the mission is ordered using the proper incident logistical support chain of command.
6. Establishes the communications link between the Helibase Manager, and MTNG aircrews.
7. Facilitates and coordinates with the MTNG liaison, and monitors any support requirements necessary to maintain MTNG personnel and/or aircraft mission readiness.
8. Facilitates the scheduling, of maintenance personnel requirements with MTNG Liaison, and Helibase Manager for the maintenance of the MTNG helicopters as necessary.
9. Attends all meetings and briefings regarding the operation of the MTNG helicopters as necessary.

10. Coordinates with appropriate agency safety officer to investigate and complete the paper work regarding an accident or incident on helicopters, equipment, and personnel.
11. When necessary, conducts briefings, debriefings relative to operations and activity of the MTNG helicopters, personnel, and required equipment.
12. Upon release of the MTNG assets, completes evaluations of assigned MTNG Military Helicopter(s), MTNG crew(s), and assigned agency staff. Maintains a suitable file of all documentation associated to assignment to include the ICS 214 form.
13. Insure that the initial inventory checklist is completed and all equipment is brought up to initial attack standards prior to responding to the incident.
14. Insures the Daily Operation Debriefing (Appendix documents are completed by the AAML and submits to the appropriate agency.
15. In the absence of the MHEM, performs the MHEM duties.
16. The AAML will remain at the AASF and act as a direct liaison with the Military. The Chief Pilot DNRC and or the Region 1 Aviation Officer can assign the AAML to an alternate location if it will benefit the incident.
17. The AAML will assist the MTNG and make arrangements for transportation at the fire I.E. rental vehicles etc. The vehicles will be charged to the incident. The MTNG will provide the driver.

B. Military Helicopter Manager (MHEM) role and responsibilities:

1. The MHEM reports to the AAML and is an active member of the MTNG flight crew.
2. The MHEM will insure that the MTNG personnel, aircraft, and equipment assigned are configured in accordance with this OPLAN and suitable for the assigned mission.
3. Obtains and provides information pertaining to the incident to their assigned MTNG personnel.
4. Insure that the assigned AAML is informed of any issues or changes in MTNG personnel, aircraft or equipment.
5. Maintains records of daily flight hours, crew duty hours, and accumulated totals and route copies to the Helibase Manager and AAML.
6. Coordinates with the AAML on support requirements for MTNG flight crews and aircraft.
7. When the AAML assigned to the incident is unavailable, the MHEM will insure MTNG personnel, aircraft and equipment needs are addressed through the Helibase Manager.
8. Insures that an inventory checklist is completed and damaged equipment is repaired or replaced prior to leaving the incident and charged to the incident.

9. Flies as part of the helicopter crew for the purposes of coordination and wild land fire expertise.
10. Completes the daily Operations Debriefing document and submits to AAML.

IX. MISSION SUPPORT REQUIREMENTS

A. Personnel

MTNG aircraft assigned to an initial attack incident will be accompanied by either an AAML or MHEM prior to conducting any operation in support of an incident. Typically, agency personnel deployed with multiple aircraft will be deployed as a team headed by a Agency Aviation Military Liaison (AAML), who may, but more likely will not, fly as a member of an aircrew.

MTNG helicopters will be allowed to operate on wildland fire incidents without an assigned civilian Helicopter Manager, using the Military Crew Chief as the Pilot in command's representative as the Chief of Party, for the following mission profiles:

1. Montana National Guard helicopters transporting personnel.
2. Montana National Guard helicopters moving supplies in support of personnel.(excluding longline remote hook use)
3. If pre-designated and trained, Montana National Guard helicopters dropping retardant or water using buckets or fixed tanks. *

   * TRAINING WILL BE DETERMINED BY THE MONTANA INTERAGENCY NATIONAL GUARD HELICOPTER FIREFIGHTING PROGRAM OPERATIONS PLAN.

The following conditions must be met:

1. The helicopter must be moving troops from one established/ managed Helibase/ helispot, to another established/managed Helibase/helispot.
2. The helicopter must be assigned to an incident, managed by a Type I or II Incident Management Team with aerial supervision on scene, i.e. an assigned Air Tactical Group Supervisor.
3. A Helibase Manager must be assigned.
4. Necessary communication equipment (radios) must be installed in all helicopters to allow for adequate communication with all other resources on the assigned incident.
5. Montana National Guard helicopters and pilots will carry a letter of approval issued by the Region One Helicopter Inspector Pilot and the Mt. Department of Natural Resources, Check Airman.

6. Assign a Military Liaison to accompany the assigned Montana National Guard Unit for the duration of the assignment. (See section V paragraph G responsibilities).
7. Compliance with all aspects of the Montana Interagency National Guard Helicopter Firefighting Program.

When MTNG helicopters are working directly with a DNRC agency helicopter that has a qualified helicopter manager the above criteria will have been met. The HEMG will provide management and oversight over both the Guard and any other EMAC Military helicopters.

Helicopter Firefighting Program Operations Plan: SEE SECTION XI TRAINING-QUALIFICATIONS

B. Aircraft Utilization

Safe, efficient and economical utilization of MTNG aircraft will establish the priorities for deciding aircraft missions. Once MTNG aviation assets have been assigned to the incident, and the mission designation identified, there will be no delineation in the use of military or civilian aircraft. The most suitable aircraft shall be used for each mission.

MTNG helicopters assigned to an incident should be used to their fullest potential. Heli-mopping is not approved as it exposes ground and aircrews to unnecessary risks without corresponding benefit.

MTNG helicopters are considered standard category aircraft and can be used for the transportation of passengers and external loads including water bucket operations. UH-60 and CH-47 helicopters are classified as type l; UH-1/H are type ll.

C. Communications

1. Receiving Incident Orders

Prior to departure from the flight facility the AAML/MHEM shall contact the Helena fire desk (449 5475) and obtain or relay the following information:

a. Incident Order Number
b. DES Mission Number
c. Incident Name
d. Incident Location (Legal, Lat, Long., Geographic)
e. Reporting location and contact.
f. Estimated time of departure
g. Estimated time of arrival
h. Assigned helicopter call sign/identification
i. Names of flight crew ; AAML/MHEM and MTNG personnel.

2. Flight Following

Flight following in route to the incident shall be done with the Forest or State Dispatch center in that geographic location, in compliance with agency flight following procedures. The MTNG shall also open and close flight plans with the appropriate MTNG or FAA facility as per their unit standard operating procedures until such time as the aircraft is on an incident. Aircraft call signs shall be used for FAA flight following.

3. Communications Equipment

MTNG helicopters come with an array of avionics that provide for communications on VHF, UHF and FM frequencies.

Army National Guard

Technosonic VHF-FM	138.000-174.000 Mhz
UHF-AM	225.000-399.975 Mhz
VHF-FM	030.000-087.975 Mhz
VHF-AM	116.000-151.975 Mhz

As a means of improving MTNG communications with fire fighting ground and air assets, each helicopter must have an operational Technosonic VHF -FM radio in each operational aircraft assigned to an incident. The flight crews and agency personnel must also be proficient in its use. Interagency frequencies are normally pre-loaded in each radio. Appendix (7).

Use of the Technosonic with State and Federal frequencies is only authorized for fire fighting, search and rescue or other emergency operations missions.

D. Fueling

1. Credit card or Identiplate

Each MTNG helicopter has a commercial fuel credit card that can be used at general aviation airports that carry jet fuel. Because of the higher cost per gallon than contract fuel, this method of payment for fuel should only be used when deploying or when contract fuel is not available.

The Identiplate is a military type credit card that can be used at a military base or DOD contractor for fuel.

Both of these options can be used and are coded the same as if it was a state card to the incident. It is forwarded along with the billing package from the MTNG to the DNRC. The MTNG will bill the state and/or the USFS a wet rate including the cost for fuel when computing the hourly cost of the aircraft.

2. Fueling from MTNG fuel trucks.

MTNG fueling trucks (HEMTTS) should be ordered as soon as possible. If the need is mobile in nature i.e., various incidents, then a HEMTT must be ordered. This unit will come with 2000 gallons of fuel and two operators who will conduct and manage the fueling. The HEMTT will be refilled with the most cost effective fuel vendor available. The state can assist in finding the most economical, local vendor, it will be topped off with fuel and billed to the incident. This HEMTT will normally come with a fire-extinguishing unit that will be placed at the fueling site, A SPILL KIT, and AQUA GLO test kit. Personnel assigned to this unit will be treated as any other personnel assigned to the incident.

3. Commercial Vender Fuel

It is normally the responsibility of the MTNG to supply fuel, fueling utilities and fueling personnel in support of its operation.

4. Fuel Requirements

a. UH-60/A burn rate is approximately 140 gallons (950 lb.) per hour. Burn rate will vary depending on power requirements

Fuel Types: Jet A-1 (JP-8); Jet A (JP-5) (with Prist)

Total Capacity-360 gallons

b. UH-1/H BURN RATE IS APPROXIMATEELY 88 gallons (600 lbs per hour. Burn rate will vary depending on power requirements

Fuel Types: Jet A (JP-5) (with Prist)
Total Capacity-206 gallons

c. CH-47 BURN RATE IS APPROXIMATELY 384 gallons (2500 lbs. per hour)
Burn rate will vary depending on power requirements

Fuel Types: Jet A-1 (JP-8); Jet A (JP-5) (JP-4)(with Prist)
Total Capacity: 1028 gallons

E. Water Bucket Operations

MTNG Type 1 helicopter, CH-47/D;, UH-60/A Type l helicopters; and Type 2 UH-1/H come equipped with variable fill buckets and rigging with a capacity commensurate with the maximum lifting capabilities of the aircraft. Prior to deployment the bucket and aircraft need to have functional checks completed and maintenance conducted if necessary. (See Appendix D for Bambi Bucket maintenance and operational checklist).

X. RELEASE AND DEACTIVATION

1. MTNG aircraft will be released from an incident as soon as sufficient commercial CWN or other aircraft become available and are assigned to the incident.
2. Aircraft released from an incident shall not be re-deployed to another incident unless a DES mission number has been assigned and the supporting military facility has assigned that specific aircraft and crew.
3. AAML/MHEM are not authorized to release or deactivate any MTNG aircraft. Prior to being released from any incident MTNG aircraft and personnel must obtain approval from the incident commander.

XI. TRAINING AND QUALIFICATIONS (See Also Appendix C)

A. Military Flight Crews

1. Montana National Guard personnel are trained with the joint DNRC/USFS approved training program. The training program is comprised of classroom training, practical exercises, and applicable flight training. Training will be conducted by subject matter experts within the DNRC or Forest Service.

a. Classroom training address the following subject matter:
Fire behavior
Tactics and bucket operations
Preparation and pre-flight of bucket
Incident Command System (ICS)
Communications within the fire theater area of operations.
Aircraft performance considerations and planning.
Aircraft preparation and high visibility identification paint scheme application.
Aircrew communications and coordination.
Aircrew training and currency requirements.
Fire shelter deployment.

Standards for Survival
Airspace Integrity and coordination

b. Practical exercises include preparation, helicopter connection, operational checks and preflight of bucket.

c. Flight training and evaluation will focus on water drops in mountainous terrain; up/down slope and cross slope conditions as well as water bucket pickup maneuvers over running streams, irrigation canals, ponds and lakes when ever possible.

B. Fire fighting Personnel

Listings of qualified fire agency personnel will be maintained by the MTNG and DNRC. AAMLs will provide appropriate agency training staff with verification of attendance of MHEMs at annual MHEM training.

1. Minimum Qualifications for Agency Aviation Military Liaison (AAML)

a. All Qualifications for MHEM.
b. Two years as a MHEM.

2. Minimum Qualifications for Military Helicopter Manager (MHEM)

a. One year as Helitack Foreman, Helicopter Coordinator, or Fire Helicopter Manager as defined by IHOG or Helicopter boss as defined in the 1500 manual or 310-1.
b. Strong knowledge of helicopter operations, tactics, basic, maintenance concepts, record keeping, and air program.
c. Previous verifiable experience as a CWN Helicopter Manager or Helicopter Boss.
d. Has a working knowledge of 1500 Aviation manual and IHOG.
e. Helispot manager qualified.
f. Currently listed in agency resource Directory or current Red card Certified or any qualifying position.

APPENDIX A

Interagency Cooperative Agreement

APPENDIX B
USFS/DNRC Pilot Authorization Letter

Military aircraft may be non-carded and/or Pilots may be non-carded but a copy of the approving document must be available.

APPENDIX C

Checklists

1. Guard Pilot Mission Pack Checklist
2. MHEM Incident Mobilization Checklist
3. Bambi Bucket Checklist
4. Equipment Inventory Checklist
5. Flight Operations Checklist
6. Maintenance Operations Pre Execution Checklist
7. Call Up Procedures Checklist

NOTE: Helicopter Managers and Flight Crews should obtain sufficient copies of these checklists prior to departing for the incident.

Interagency MILITARY Helicopter Fire fighting Program
Mission Pack

MISSION NUMBER_____INCIDENT NUMBER_____
PC_____PI_____CE_____
DESTINATION_____
FREQUENCY AND CALL SIGN_____
ETA_____OTHER AIRCRAFT_____

BEFORE DEPARTING ENSURE THE FOLLOWING

[ ] 1. Sad form 14 complete.

[ ] 2. You have a Helicopter Manager and or a Military equivalent assigned to your aircraft.

MHM:_____

[ ] 3. Your aircraft is equipped with the following kits:

[ ] Support kit

[ ] Fly-Away Kit

[ ] Communications

[ ] Paint Kit

[ ] Water Dropping Kit

[ ] SEI Bucket Repair Kit

[ ] 4. Your aircraft is with the appropriate number and paint scheme.

[ ] 5. Your aircraft has a current letter of approval from the USFS.

[ ] 6. Cellular telephone assigned and activated.

[ ] 7. Agency Debriefing forms.

USFS/DNRC/MTNG INCIDENT MOBILIZATION CHECK LIST

The following checklist must be used when mobilizing Montana National Guard Helicopter Units in support of Incidents on Federal, State, County and private lands in Montana.

The following items must be ordered during the initial mobilization through the dispatch office:

1. Fuel (HEMTT) is ordered with for each incident the aircraft will be assigned to.
2. Helicopter Manager/Helicopter Boss or Military equivalent and Liaison Officer are ordered immediately.
3. Ground transportation is ordered.

Other items to be considered when initializing Mobilization:

1. Order for helicopter has been properly initiated through zone dispatch office. National Guard is informed of fire number and management code for the incident.
2. Number of helicopters ordered are sufficient considering maintenance and crew changes.
3. Regional Aviation group has been notified of the activation.
4. Crew endurance tables (pilot flight hours) and aircraft maintenance schedules should be discussed including daily maintenance times and requirements.
5. Copy of operations guide for USFS/DNRC/MTNG available including flight hour costs and crew pay rates.
6. If available dedicated telephone/cell phone for National Guard and Liaison use.
7. Identify types of missions and special equipment necessary such as buckets, special sling equipment.

The following items are mandatory prior to the aircraft leaving the base:

1. A Helicopter Manager/Helicopter Boss or Military equivalent is assigned to each helicopter.
2. A Military Liaison Officer and Agency Aviation Military Liaison assigned for the duration of the activation.
3. Helicopter is equipped with VHF-FM Radio packages.
4. Helicopter is painted with High Visibility water paint and numbered.

Helicopter has current letter of approval in aircraft.

Information needed prior to flying on an incident:

1. Military flight crews have been briefed.
2. Frequencies, contacts and shift plans for the incident.
3. Helibase parking is adequate for number and types of ships ordered.
4. Maps and hazard maps available.

5. Medical evacuation procedures and capabilities discussed.
6. Military/fire chain of commands established. (Organizational Chart).
7. Performance cards/ load calculations completed. Manifests completed for all flights.

Upon arrival at the incident confirm:

1. Fuel is ordered.
2. Ground transportation is ordered.
3. Sleeping and eating facilities have been arranged. Air crews (Pilot, Co-Pilot, 2ea Crewchiefs) the AMC/ OIC and Operations personnel will stay in motel rooms others will bring tents, cots and sleeping bags. The Military crews will either eat meals at camp or if more advantageous for a proper work schedule, supply own meals and fill out a per diem sheet for reimbursement, and bill the incident. The entire Module working Initial Attack with DNRC will normally be housed in motels or similar accommodations). Daily logs are kept, incident reports and aircraft pay documents completed.
4. In the event that the MTNG Crews are asked to provide initial attack services and are not at a type 1 or 2 incident and motels are available the AAML will make every attempt to arrange motel rooms for all of the personnel attached with the aircraft. I.E. (Pilots, Crew Chiefs, Refuelers, Operations, Mechanics….. this will help to ensure Command and Control by the OIC, and maintain crew integrity.

BAMBI BUCKET

Maintenance and Operational Checklist

1. Pre-flight Operations- POWER OFF

Inspect possible fraying of the support lines from the bucket to the hanger support and reel assembly.
Check the bucket for fraying of seams or holes that may be torn in the bucket.
Check the bucket support, attachment points, and hardware.
Check all electrical cables and connections on bucket and aircraft.
Conduct a full cargo preflight and function check.

2. Pre-flight- POWER ON

Connect power to the bucket.

While pulling on the release cable, check all water release switches by each crew position. Ensure the solenoid releases, resets, reels in, and locks into place after releasing water release buttons. Pilots check that the wiring modification does not interfere with flight controls.

Route the electrical power lines on the cabin ceiling, or on the floor to the cargo hook hole. Secure the wiring so it will not interfere with flying operations.

Tape the power connection on the bucket so wind or personnel moving around in the cabin will not cause a disconnect.

3. Connecting the bucket to the aircraft

When attaching the bucket, (load hooked) attach the support and reel assembly so the smooth (front) side is facing forward.

Extend the bucket support bracket out and ensure the Instant Deployment System (IDS) support is locked in position. The IDS should normally open on its own when it takes on water.

Set the bucket up under the rotors facing the cargo hook with the chain supports and sand bag facing the ground. This will keep the bucket from rolling/flying around when making your initial takeoff to a hover.

4. Bucket Deployment

There are two ways to deploy the bucket.

Attach the bucket to the aircraft at initial takeoff and sling the bucket to the designated area of operations. This configuration puts a lot of drag on the aircraft and limits your forward airspeed. The bucket is stable when empty in forward flight but will put wear and tear on the support lines and sidewalls. Filling the bucket halfway will stabilize it during your transition to and from the area of operations.

Establish an LZ within your area of operation and connect the bucket. Remember to recheck your connections and check the release assembly.

5. Storing Buckets.

Prepare bucket for storing by ensuring it is thoroughly dry prior to placing it in the storage bag. Check for fraying cables torn or fraying canvas and ensure maintenance personnel are aware of any deficiencies.

Flight Operations Pre-Execution Checklist

1. Aircrews will be thoroughly briefed and understand the operation and reporting requirements while deployed to a fire.

2. Prior to departing on mission the aircrew and support team will be briefed on the following:

    a. Resource Order Number
    b. Helicopter MGR – name, location, and phone #
    c. Location going to. General description & LAT / LONG
    d. POC on site
    e. Phone # on site / FAX # on site.
    f. Procedures and Routes in and out.
    g. Frequencies enroute and on site.
    h. Lodging-Arranged at Site
    i. Meals- Arranged at Site
    j. Fuel
    k. Ground transportation ie (HMMWV w / RDO's) BII
    l. Personnel Accountability
    m. Pay, Travel, Perdiem
    n. Personal Equipment
    o. WX
    p. Mission
    q. Situation at the fire
    r. Required reports
    s. Maps
    t. AASF / BN Armory phone list

3. The AASF flight operations will provide a folder to the NCOIC of the support team with required reports. At a minimum the folder will include:
    a. Aircrew Nightly Report
    b. Risk Assessment Sheets
    c. Mission schedule / Briefs
    d. SITREP paged 1-4
    e. Staff Duty Log

4. Mandatory Reports – to AASF FLT OPNS

    a. Departure AASF
    b. Arrival at field location
    c. Departure from field location
    d. Arrival to AASF

5. FAX or phone in aircrew nightly reports at close of business each night or first thing the following morning.

    AASF phone # (406)324-3055 / 3056
    AASF Fax # (406)324-3037

6. Flight operations person will dispatch a HMMWV with radio and BII installed from the motor pool.

MAINTENANCE OPERATIONS PRE-EXECUTION CHECKLIST

1. Maintenance support personnel will be thoroughly briefed and understand the operation and reporting requirements while deployed to a fire.

2. Prior to departing on mission the maintenance support team will ensure the following equipment and procedures are in place.

EQPT REQUIRED

a. mechanics tool box
b. engine wash pump & electrical pig tail (UH-60)
c. engine wash kit w / air regulator (UH-1H)
d. water hose / containers for engine wash
e. torque wrenched
f. flight box – package POL (oil), rags, window cleaner, tubes, etc.
g. maintenance manuals / publications
h. Makita (drill)
i. Containers hazmat (waist oil, fuel)
j. Cargo hook squib
k. Water jugs – full 2 each 5 gall drinking water
l. Blank forms for log book
m. Computer / printer / paper
n. Head sets
o. Water wings
p. Vehicle (HMMWV with RDO)
q. Orange paint for touch up with brush
r. Aircraft tie down kit
s. Water bucket (fully serviceable)
t. Common hardware as required
u. T.I. PID in LAH before leaving with laptop
v. TI orders in place
w. Aviation foot locker if available
x. Special tools for inspections, (voltmeter dial indicator, etc)
y. Tentage if required
z. Cammo netting as required

ALL ITEMS HAND RECEIPTED BEFORE LEAVING AASF!

**The Resoucre request should include the following items to support the module:

Rental Van
Hand held radio (VHF/UHF)
GPS
Maps

Call Up Procedures:

The Montana Army National Guard will be called upon to assist with wild fire control once governmental and civilian firefighting resources have been utilized and/or by the order of the Governor.

Ordering Channel:

Incident (Fire, Forest Service Team, Local Community on Scene)
Places orders for resources.

Notification Procedures:

(Internal use for Montana Army National Guard Aviation)

1. Battalion Headquarters or AASF staff receive warning orders for fire duty.
   a. Step 1 Notify BN Commander / SAAO / AASF COR.
   b. Step 2 BN staff / Company Commander and 1SG ordered to duty. AASF Operations and Maintenance officer. Notified.
   c. Step 3 BN staff / Company Commander and 1SG develop plan, initiate call-up of first up team.
   d. Step 4 AASF prepare Aircraft. (paint, water bucket, radios, etc).
   e. Step 5 Aircrews and support team arrive and receive mission brief. Coordinate with Helicopter Manager.
   f. Step 6 Aircrews and support team prepare equipment for deployment to Helibase or staging area.
   g. Step 7 Final brief and backbrief.

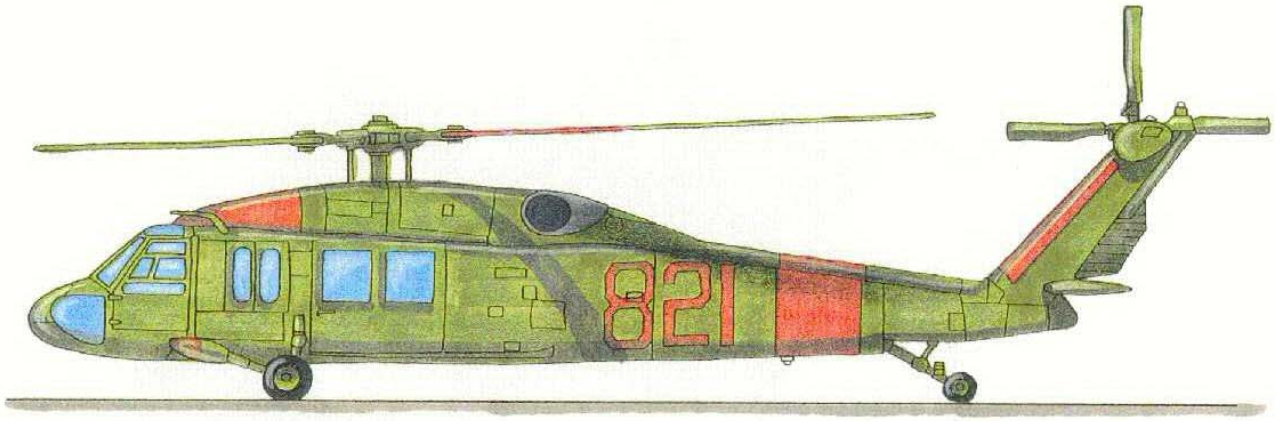
TARGET: 48 hours or less to have National Guard assets enroute or on site to support fire fighting effort.

APPENDIX D

HELICOPTER DIMENSIONS AND PAINT SCHEMES

PROFILE

-PAINTED NUMBERS ARE APPROXIMATLY 3 FEET HIGH.
-NUMBERS ARE STILL VISIBLE WHEN AIRCRAFT CABIN DOOR IS OPEN.
-COLOR SWASHES ON FORE AND AFT PORTIONS OF AIRFRAME.
-AIRCRAFT CAN BE PAINTED IN DIFFERENT HI-VIS COLOR TO DIFFERENTIATE AIRCRAFT OR TO CONTRAST WITH VARIOUS TOPOGRAPHIC AREAS

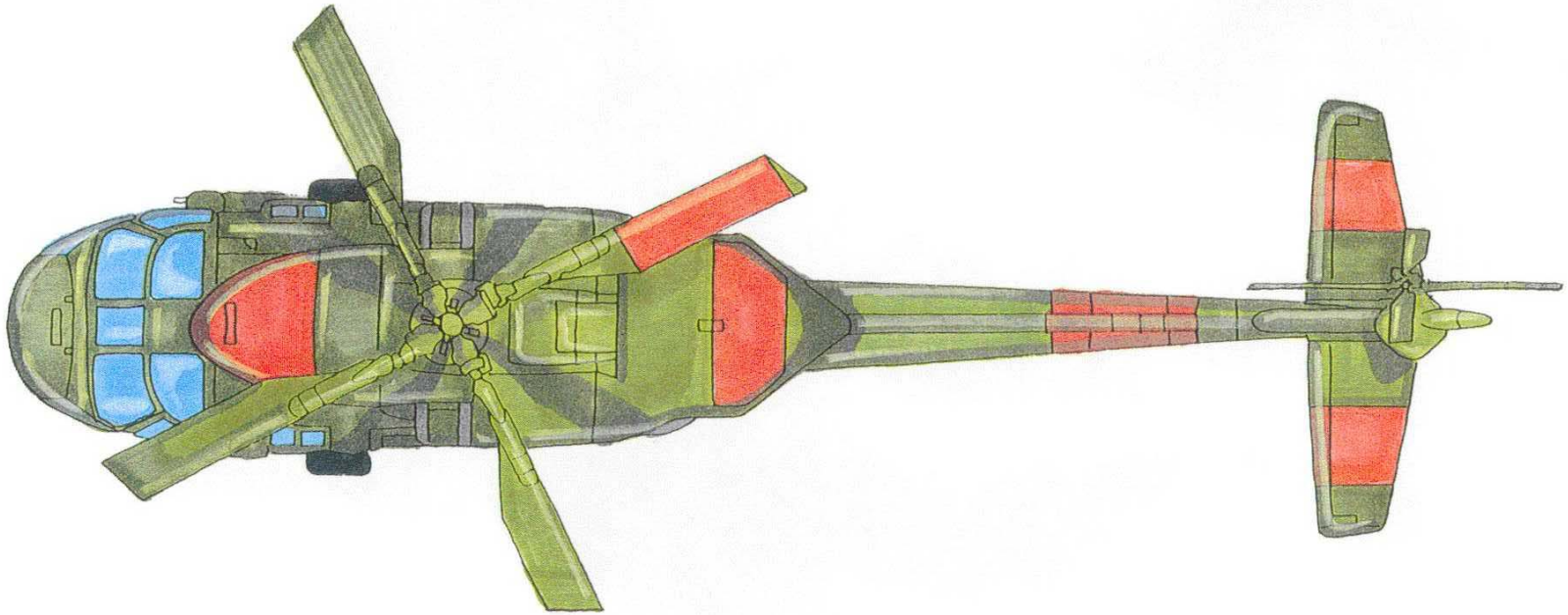


HEAD-ON

-APPLICATION OF PAINT TO COWLINGS IS ACCOMPLISHED BY USING AIR LADDERS.
-AIRCRAFT CAN BE PAINTED IN DIFFERENT HI-VISIBILITY COLORS TO DIFFERENTIATE AIRCRAFT OR TO CONTRAST WITH VARIOUS TOPOGRAPHIC AREAS.

OVERHEAD

-COLOR SWASHES ON HORIZONTAL STABILIZER.
-AIRCRAFT CAN BE PAINTED IN DIFFERENT HI-VIS COLOR TO DIFFERENTIATE AIRCRAFT OR TO CONTRAST WITH VARIOUS TOPOGRAPHIC AREAS.
-AIRCRAFT PAINTED USING HI-VISIBILITY WASHABLE TEMPERA.



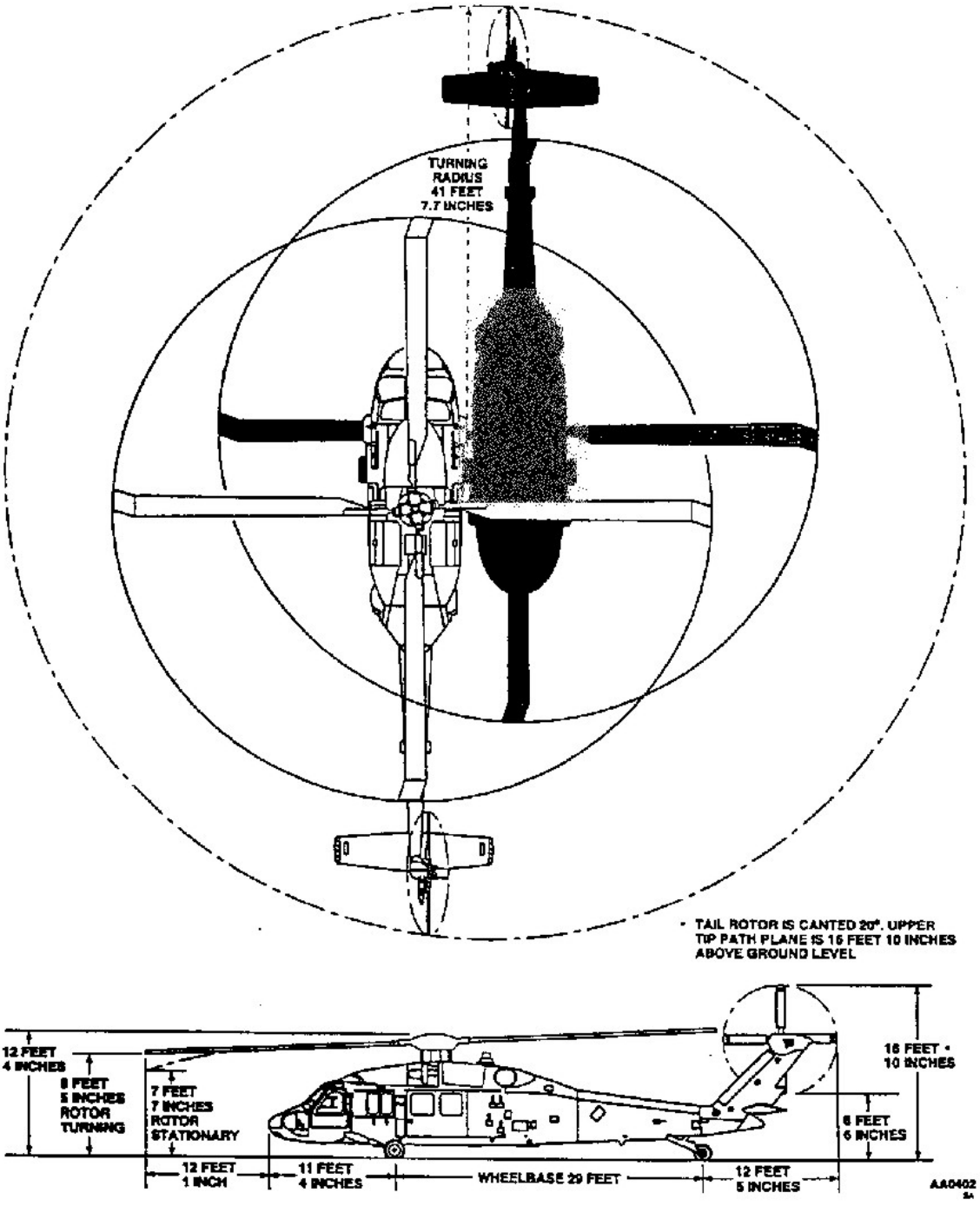
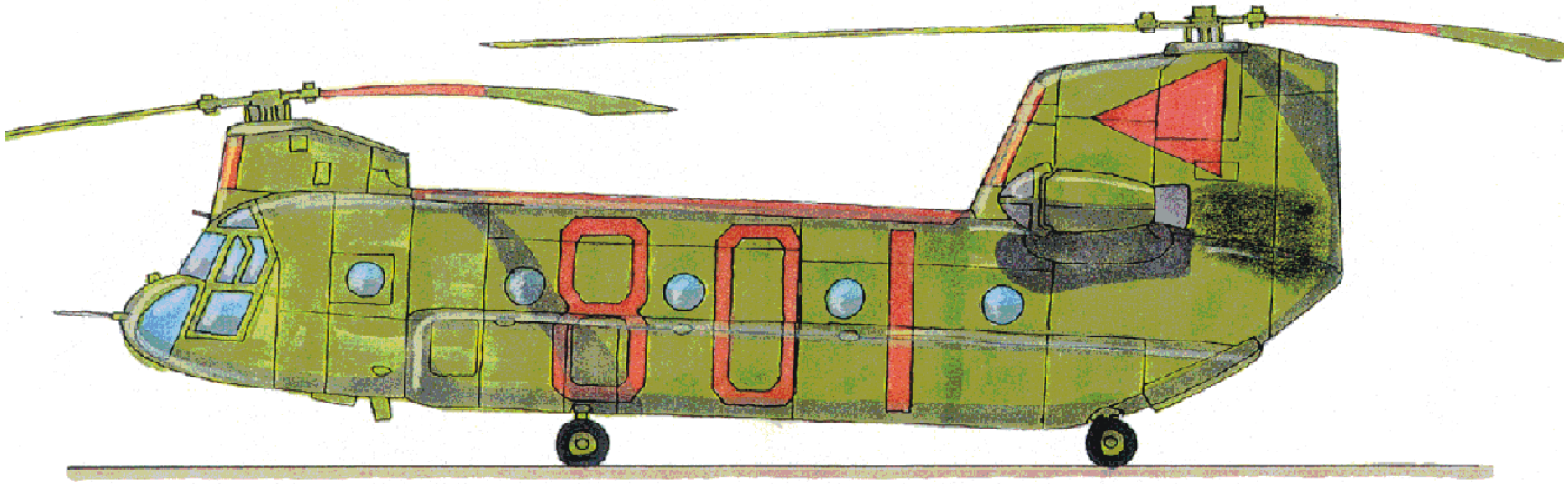


Figure 2-3. Turning Radius and Clearance

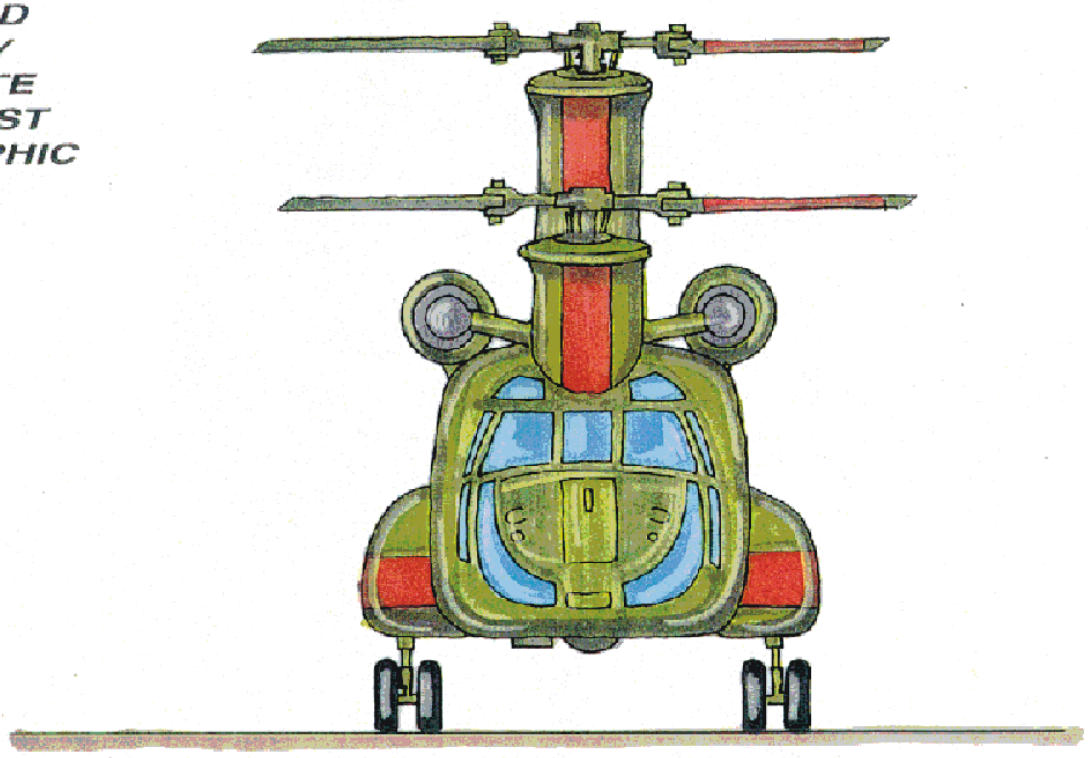
PROFILE

-PAINTED NUMBERS ARE APPROXIMATLY 6 FEET HIGH.
-TRIANGULAR SWASH ON REAR ROTOR MAST COWLING SERVES BOTH VISIBILITY AND DIRECTIONAL INDICATION.
-AIRCRAFT CAN BE PAINTED IN DIFFERENT HI-VIS COLOR TO DIFFERENTIATE AIRCRAFT OR TO CONTRAST WITH VARIOUS TOPOGRAPHIC AREAS



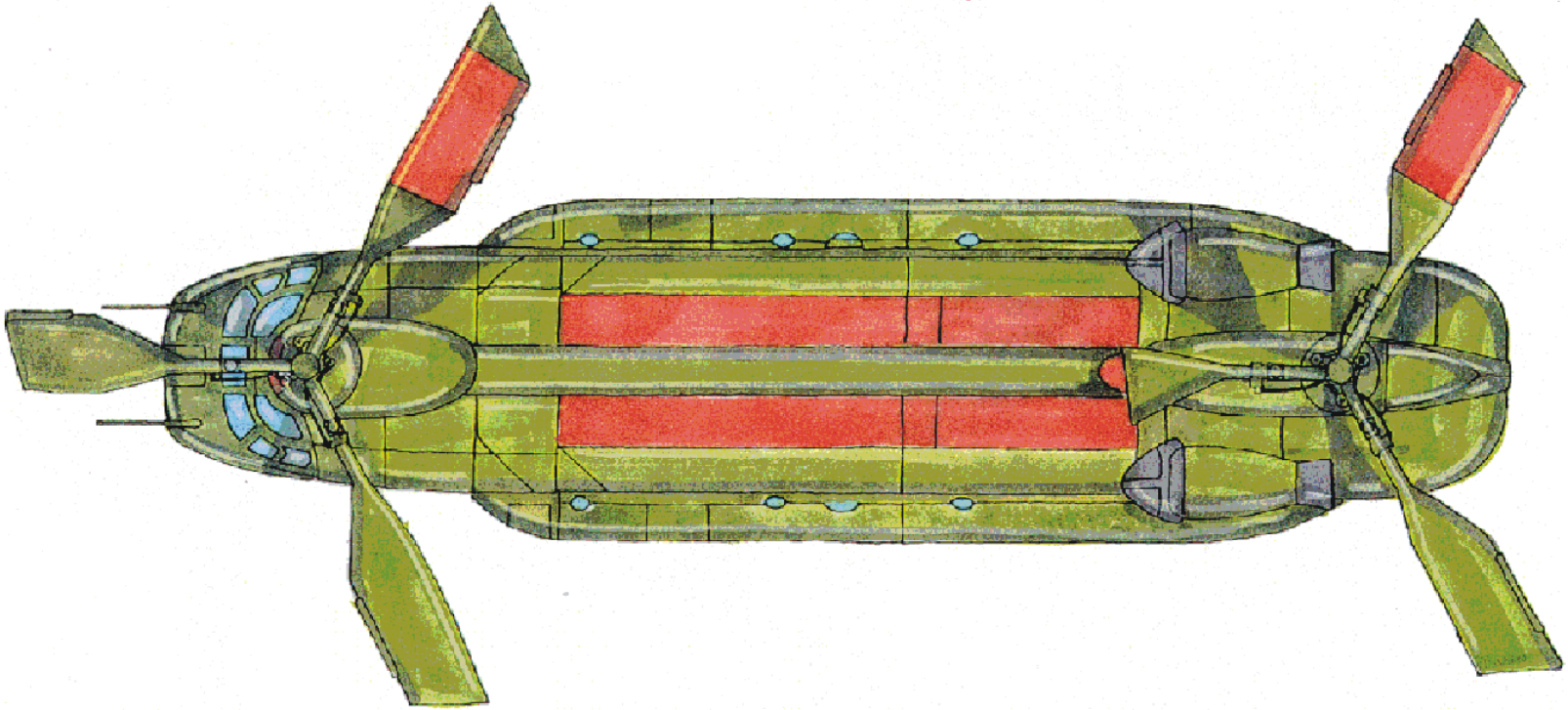
HEAD-ON

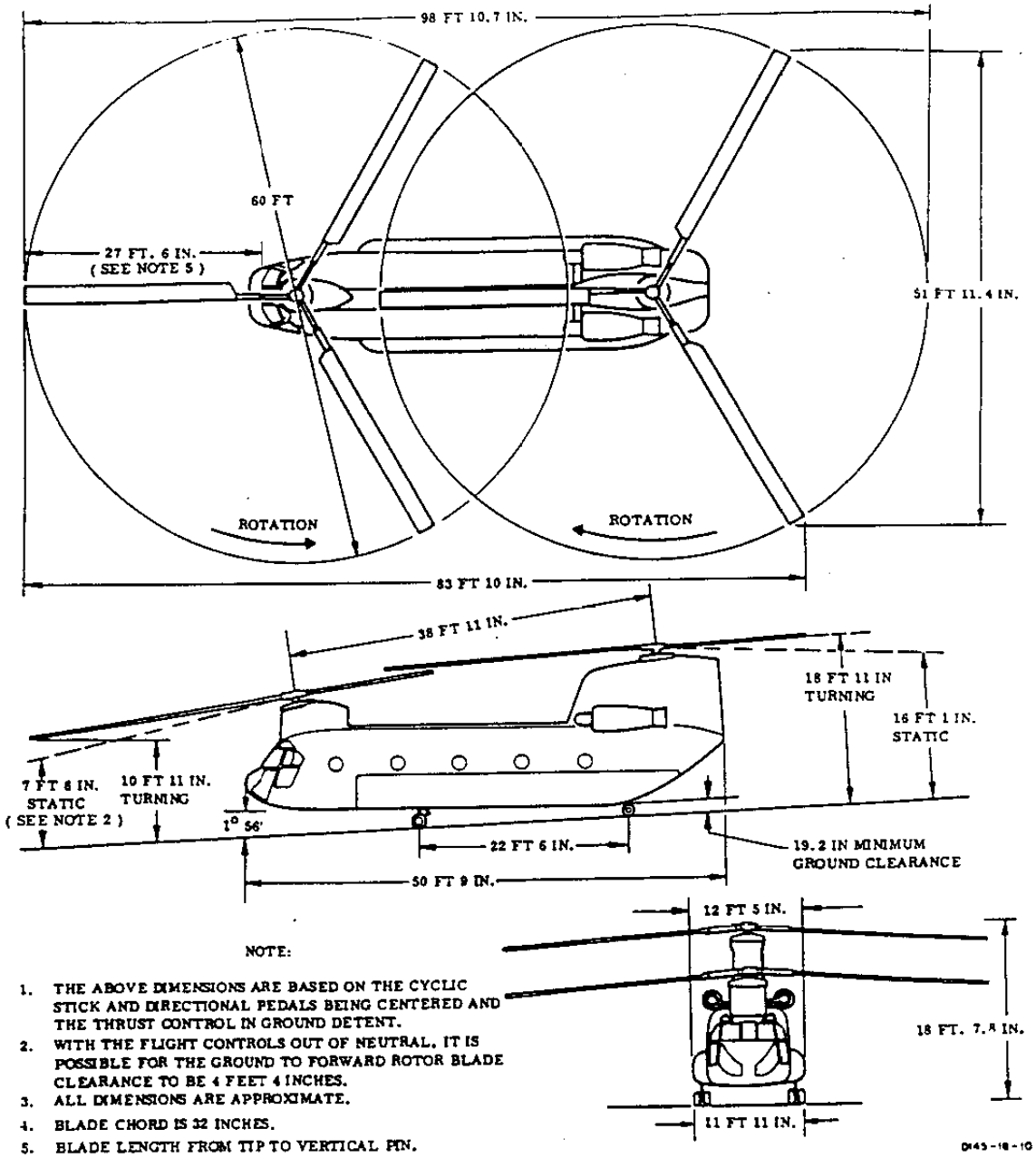
-APPLICATION OF PAINT TO COWLINGS IS ACCOMPLISHED BY USING AIR LADDERS.
-COLOR SWASHES ON BOTH COWLINGS ARE VISIBLE IN HEAD-ON VIEW.
-AIRCRAFT CAN BE PAINTED IN DIFFERENT HI-VISIBILITY COLORS TO DIFFERENTIATE AIRCRAFT OR TO CONTRAST WITH VARIOUS TOPOGRAPHIC AREAS.



OVERHEAD

-DIRECTIONAL ARROW AT FRONT OF STRIPES TO ASSIST THE AIR ATTACK OFFICER WITH THE TRAVEL DIRECTION OF THE AIRCRAFT.
-AIRCRAFT CAN BE PAINTED IN DIFFERENT HI-VIS COLOR TO DIFFERENTIATE AIRCRAFT OR TO CONTRAST WITH VARIOUS TOPOGRAPHIC AREAS





NOTE:

1. THE ABOVE DIMENSIONS ARE BASED ON THE CYCLIC STICK AND DIRECTIONAL PEDALS BEING CENTERED AND THE THRUST CONTROL IN GROUND DETENT.
2. WITH THE FLIGHT CONTROLS OUT OF NEUTRAL, IT IS POSSIBLE FOR THE GROUND TO FORWARD ROTOR BLADE CLEARANCE TO BE 4 FEET 4 INCHES.
3. ALL DIMENSIONS ARE APPROXIMATE.
4. BLADE CHORD IS 32 INCHES.
5. BLADE LENGTH FROM TIP TO VERTICAL PIN.

Note: The UH-1/H will be painted with the same basic scheme as the UH-60 Blackhawk

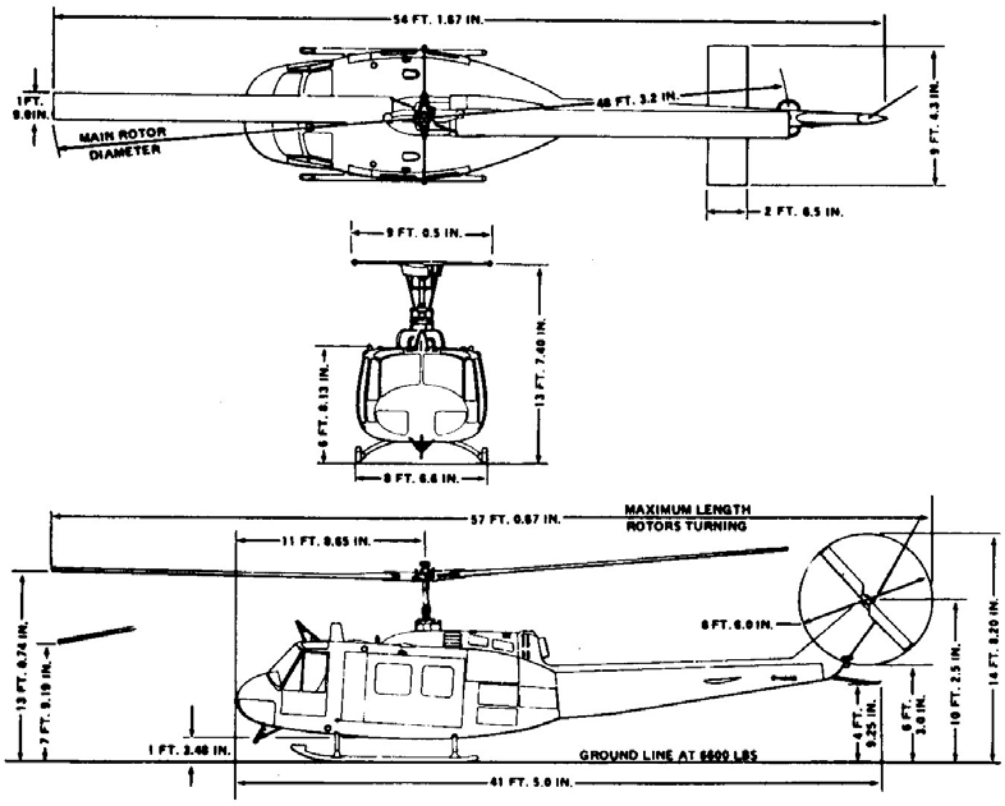


Figure 2-2. Principal Dimensions Diagram—Typical

APPENDIX E

Daily Operations Debriefing Form

MONTANA INTERAGENCY MILITARY HELICOPTER
FIRE FIGHTING PROGRAM

Daily Operations Debriefing

INCIDENT NAME_____DATE_____

ORDER NO._____REQ NO._____AAML:_____

PILOT IN COMMAND_____MHEM:_____

MILITARY FACILITY:_____Aircraft Type: UH-60/A [ ] UH-1/H[ ]

Flight Crew: (comments) Aircraft assigned:_____

Mission task: Buckets [ ] Pax Haul [ ] Cargo sling Load [ ] Medivac [ ]
Ferry Flight [ ] Mapping/Recon [ ] Other [ ]

Helibase Support: (Briefings, flight routes, communications, etc.)

_____

Helispots: (Approach/Departure routes, condition, numbering , etc.)

_____

Communications: (Coordination/Effectiveness)

_____

Logistical Support: (Supply/Ordering)

_____

Risk Analysis: (Safety Considerations)

_____

Problems:

_____

_____

_____

Solutions:_____

_____

_____

Flight Hours:_____Gals:_____Pax:_____

MONTANA INTERAGENCY MILITARY HELICOPTER FIRE FIGHTING PROGRAM

Fire fighting mission narrative

MANAGER (MHEM)_____LIAISON (AAML)_____

ACTIVATION DATE_____RELEASE DATE_____

UNIT_____INCIDENT NAME_____

CHRONOLOGY OF EVENTS (List all major activities in paragraph form):

PROBLEM ENCOUNTERED:

POST INCIDENT DEBRIEFING ITEMS (Identify any items discussed with pilot, crew, Incident Staff);

RECOMMENDATIONS:

APPENDIX F

MTNG Helicopter Radio Frequency List

MTNG HEICOPTER RADIO FREQUENCY LIST

DNRC FIRE BUREAU STANDARD FREQUENCIES *and* REPEATER ASSIGNMENTS

Repeater	Tone	Frequency Pairs
NWLO		
Blacktail	2	F 1 - 2
Meadow Pk.	3	F 1 –2
Napa Pt. :		
nwlo/fidc	5	F 5 – 6
Swan Unit	2	F 5 – 6
Calx Mtn.	3	F 3 – 4
Pat's Knob	1	F 5 – 6
Richard's Pk	3	F 5 – 6
SWLO		
Union Pk.	1	F 1 – 2
"C" Hill *	1	F 5 – 6
Rocky Ridge	3	F 5 – 6
MT. Morrell	1	F3 tx; F13 rx
Stonewall Mtn.	3	F3 tx; F13 rx
Rumsey Mtn.*		
CLO		
Roger's Mtn.	2	F 3 – 4
Bridger Ridge	4	F3 tx ;F2 rx
Sourdough Pk.	3	F 1 – 2
NELO		
Judith Pk.	3	F 1 – 2
Coffin Butte	2	F 1 – 2
Antionne Butte	4	F 5 – 6
SLO		
Bull Mtn.	1	F 1 – 2
ELO		
Home Ck. Butte	2	F 1 – 2
Conger Hill	1	F 1 – 2
Plevna	4	F 1 – 2
Big Sheep Mtn.	3	F 1 – 2

Fire& Aviation Management Standard Frequencies			
Name	**F#/Ch**	**Transmit**	**Receive**
Repeater	F1	151.475	151.175
Direct	F2	151.175	151.175
Repeater	F3	159.405	151.265
Direct	F4	151.265	151.265
Repeater	F5	151.460	151.190
Direct	F6	151.190	151.190
Red	F7	154.070	154.070
Gold	F8	153.905	153.905
Green	F9	171.475	171.475
Yellow	F10	151.220	151.220
Orange	F11	151.400	151.400
Maroon	F12	154.280	154.280
Direct	F13	151.250	151.250
Logistics	F14	159.375	151.370
Log. Rpt	F15	151.370	151.370
Silver	F16	155.790	155.790

TONES	
1 - 141.3	6 - 146.2
2 - 192.8	7 - 123.0
3 - 114.8	8 - 162.2
4 - 127.3	9 - 167.9
5 - 203.5	

3/8/99

Note: * Proposed for summer/fall of 1999: "C" Hill repeater will become a remote base for Anaconda Unit. Rumsey Mtn. will be installed as a repeater for Anaconda Unit.

CLO GROUP 1 HELENA

CHAN	TFM CHAN	KFM	SCAN	RX FREQ	RX CG	TX FREQ	TX CG
1	CLO DIR	1	Y	151.265	0.0~	151.265	192.8
2	CLO RPT	2	Y	151-265	0.0	159.405	192.
3	YELLOW	3	Y	151.220	0.0	151.220	131.8
4	RED	4	Y	154.070	0.0	154.070	110.9
5	MAROON	5	Y	154-280	0.0	154.280	156.7
6	CORAL	6	Y	154.265	0.0	154.265	146.2
7	SCARLET	7	Y	154.295	0.0	154.295	167.9
8	HNF DIR	8	Y	166.225	0.0	166.225	123.0
9	HNF RPT	9	Y	166.225	0.0	164.150	103.5
10	GOLD	10	Y	153.905	0.0	153.905	0.0
11	CASCADE	11	Y	154.770-	0.0	155.580	141.3
12	JEF FIRE	12	Y	155.145	0.0	154.115	107.2
13	LC SHERF	13	Y	155.520	0.0	156.090	210.7
14	LC RURAL	14	Y	154.160	0.0	158.805	203.5

SWLO GROUP 2 MISSOULA

CHAN	TFM	CHAN	SCAN	RX FREQ	RX CG	TX FREQ	TX CG
15	U.P. RPT	1	Y	151.175	0.0	151.475	141.3
16	SWLO DIR	2	Y	151.175	0.0	151.175	141.3
16	YELLOW	3	Y	151.220		151.220	141.3
17	MSO UNIT	4	Y	151.265	0.0	151.265	i41.3
18	ANA RPT	5	Y	151.190	0.0	151.460	141.3
19	GAR RPT	6	Y	151.190	0.0	151.460	114.8
20	ANA/GAR	7	Y	151.190	0.0	151,190	141.3
21	GREEN	8	Y	171.475	0.0	171.475	0.0
22	CLW RPT	9	Y	151.250	0.0	159.405	141.3
23	LCN RPT	10	Y	151.250	0.0	159.405	114.8

NWLO GROUP 3 KALISPELL

	CHAN	SCAN	RX FREQ	RX CG	TX FREQ	TX CG
25 FNF DIR	1	N	164.375	0.0	164.375	0.0
26 FNF RPT	2	N	164.375	0.0	165.2625	162.2
27 NWLO DIR	3	Y	151.175	0.0	151.175	
28 BLCKTAIL	4	Y	151.175	0.0	151.475	192.8
29 MEADOW P	5	Y	151.175	0.0	151.475	114.8
30 NAPASWAN	6	Y	151.190	0.0	151.460	192.8

SLO GROUP 4 BILLINGS

CHAN	TFM	CHAN	985 SCAN	RX FREQ	RX CG	TX FREQ	TX CG
31	BIDC	DIR 1	Y	168.650	0.0	168.650	0.0
32	BIDC	DIR 2	Y	169.175	0.0	169.175	0.0
33	BIDC	RPT 3	Y	168.425	0.0	167.900	123.0
34	SLODIR	4	Y	151.175	.0.0	151.175	141.3
35	SLORPT	5	Y	151.175	.0.0	151.475	.141.3

NELO GROUP 5 LEWISTOWN

CHAN	TFM	CHAN	985 SCAN	RX FREQ	RX CG	TX FREQ	TX CG
36	NELO	DIR 1	Y	151.175	0.0	151.175	0.0
37	JUDITH	P 2	Y	151.175	0.0	151.475	114.8
38	ANTONNE	3	Y	151.190	0.0	151.460	114.8
39	COFFIN	B 4	Y	151.190	0.0	151.460	**192.8**
40	GGW	UNIT 5	Y	151.190	0.0	151.190	
41	GGW	RPT 6	Y	151.190	0.0	151.475	**127.3**
42	LWT/BLMR	7	Y	168.225	0.0	167.825	**123.0**

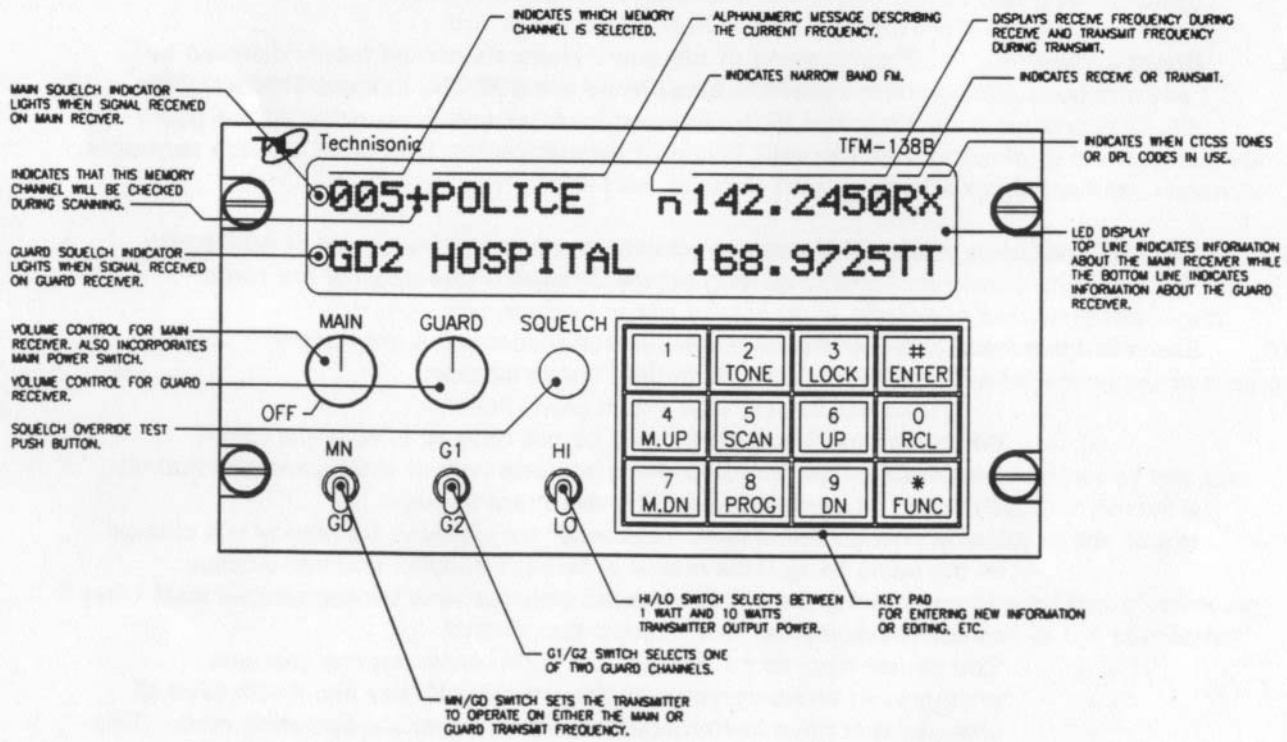
ELO GROUP 6 MILES CITY

CH	TFM	CHAN	SCAN	RX.FREQ	RX CG	TX FREQ	TX CG
43	ELO RPT	1	Y	151.175	0.0	151.475	141.3
44	ELO DIR	2	Y	151.175	0.0	151.175	**192.8**
45	DNRC RPT	3	Y	151.265	0.0	159.405	**114.8**
46	DNRC.DIR	4	Y	151.265	0.0	151.265	**127.3**
47	RED-MA	5	Y	154.070	0~0	154.070	123.0
48	GOLD-MA	6	Y	153.905	0.0	153.905	**131.8**
49	MAROON	7	Y	154.280	0.0	154.280	**167.9**
50	YELLOW	8	Y	151.220	0.0	151.220	**103.5**
51	MCFD	9	Y	154.445	0.0	151.445	0.0
52	BLM DIR	10	Y	168.425	0 0	168.425	0.0
53	BLMRPT	11	Y	168.425	0.0	167.900	167.9
54	FS DIR	12	Y	169.175	0.0	169.175	0.0
55	FD RPT	13	y	169.175	0.0	169.975	0.0
56	CSTR-RDS	14	Y	159.120	0.0	159.120	0.0

APPENDIX G

Technosonic Model Tfm-138 Series
Airborne Vhf-Fm Transceivers

Figure 1 Operator's Switches and Controls - TFM-138B



TECHNOSONIC TFM-138B RADIO OPERATING INSTUCTIONS
AND
MTNG FIRE FIGHTING RADIO FREQUENCIES CHECKLIST

1. Description.

a. The TFM-138B provides two-way VHF/FM voice communications within the frequency range of 138 to 174 MHz. Data entry and function control are input through the front panel 12 button keypad. 120 preset memory channel positions are available. Information stored in the memory can be recalled by keypad entry or by pressing M-UP OR M-DN buttons to scroll through all preset channels. To recall a specific preset channel frequency, press RCL and the channel number on the numeric keypads.

b. The radio operates in the simplex mode (transmits and receives on different frequencies). The second frequency of a duplex pair activates a repeater radio that retransmits the message on the first frequency.

c. Repeater radios are usually "tone" frequency protected. This allows several repeaters to utilize the same frequency pair with different access tones, acting like an on/off switch for the repeater. There are 32 standard tone frequencies, which are used universally, not just for government use. Trust only tone frequencies, not tone numbers, as tone number assignments are not universal. The TFM-138B has the 32 standard tones entered in memory and they can be assigned to each memory channel position. To program a tone to a memory channel position, refer to the PROGRAMMING TONES section.

d. Front panel controls are:

(1) MAIN Power switch and main channel volume.
(2) GUARD Guard channel volume
(3) SQUELCH Squelch override test push button
(4) MN/GD Switch for selecting main or guard transmitter
(5) G1/G2 Switch for selecting guard channels 1 or 2 Rx/Tx
(6) HI/LO transmitter power output control switch, 10 watts on HI, 1 watt on LO

A. LED display brightness is controlled by pressing the UP OR DN keypads.

2. Operating procedures- TFM-138B

a. Starting

1. TFM-138B MAIN switch -- rotate past OFF detent, adjust volume mid-range.
   a. UH-60/A:

   a. Receiver 4 switch -- ON
   b. Selector switch --4

   c. Transmit-receive mode:

1. MN/GD switch -- MN (for main transmitter selection) or GD (for guard for ground transmitter selection).

2. Volume control -- MAIN knob adjust as required for main frequency; GUARD knob, adjust as required for guard frequency,

3. G1/G2 switch -- Select G1 or G2 as required for correct frequency.

4. HI/LO switch -- HI Position

d. Stopping. MAIN switch -- OFF.

3. Selecting frequencies.

a. Direct Frequency Entry Mode. This mode facilitates quick frequency selection by direct entry.
   (1) Press * FUNC key then enter desired operating frequency with numeric keypads.

b. Receive Frequency Simplex Function. This function allows you to quickly change the transmit frequency, while operating on a split pair (Duplex mode), to the receive frequency to allow direct communications.

   (1) Press * FUNC then UP to transmit on the receive frequency.
   (2) To cancel the simplex function and return to the duplex mode, recall the memory channel position by pressing the M.UP key once, then the M.DN key once.

c. Variable Frequency mode function. This permits changes to the displayed frequency

   (1) Press RCL 000 then # ENTER. Manually adjust the frequency with the M.UP, M.DN, UP OR DN keys. The UP AND DN keys will make the frequency count up or down in steps of 2.5 KHz. The M.UP and M.DN keys will make the frequency count up or down in steps of 1 MHz.

   (2) To exit this mode, recall one of the 120 memory channels by pressing the RCL key and three number keys for the appropriate channel number, i.e. RCL, (0,8,6).

d. Keyboard lockout function. The keyboard may be locked out so that accidental pressing of keys does not change frequency unknowingly to the operator.

   (1) To lock the keyboard:

   (a) Press * FUNC then LOCK

(2) To unlock the keyboard:

(a) Press and hold the LOCK for two seconds.

e. Programming Tones

(1) To program a tone to a memory channel position:

(a) Press the M.UP or M.DN to select the desired memory channel.
(b) Press the FUNC then the TONE key. The display will show "RX TONE" and the current tone number.
(c) Use the M.UP or M.DN keys to select the tone number needed from the list below.
(d) Press # ENTER KEY. "TX TONE" appears in the display.
(e) Repeat steps (c) and (d) as required.

f. Standard Tone Memory Numbers:

Number	Tone (Hz)	Number	Tone (Hz)	Number	Tone (Hz)	Number	Tone (Hz)
01	67	09	91.5	17	118.8	25	156.7
02	71.9	10	94.8	18	123.0	26	162.2
03	74.4	11	97.4	19	127.3	27	167.9
04	77.0	12	100.0	20	131.8	28	173.9
05	79.7	13	103.5	21	136.5	29	179.9
06	82.5	14	107.2	22	141.3	30	186.2
07	85.4	15	110.9	23	146.2	31	192.8
08	88.5	16	114.8	24	151.4	32	203.5
Note: Tone numbers 33 through 63 are non-standard tone frequencies. For no tone, enter number64.							

g. Memory Channel Programming Instructions.

(a) Press the FUNC key. Display shows the function prompt.
(b) Press the PROG key. Display shows current Rx frequency with a flashing cursor on the second digit (first digit is always a number"1".
(c) Type in Rx frequency. Cursor returns to second digit; if an error is made, retype the frequency now or press Enter Key to continue.
(d) Tx frequency is now displayed. Repeat step (c) to enter the frequency.
(e) Channel spacing increment of 12.5 or 25.0 KHz now displayed. Use M.UP or M.DN to select the desired channel spacing for the memory position, then press Enter.
(f) Alphanumeric title now displayed. Use the M.UP or M.DN keys to scroll through the alphabet, numbers, and symbols. When the desired character is displayed press ENTER.
(g) Repeat step (f) until last character is set. Display will show SCAN or Lockout to enable this memory position as part of set of scanned frequencies or lock it out of the scan function. Press the M.UP or M.DN to select, then press ENTER. The display will show a "+" beside the memory channel if the scan feature is enabled.
(h) To program the GUARD frequency, press FUNC and repeat step (c). The Guard frequency is 168.625. If you do not want to program the Guard frequency and want to return to the normal; mode, press ENTER. The alphanumeric labels for GUARD 1 and GUARD 2 is the same as step (f). When the last character is entered the radio returns to normal operating mode.

APPENDIX H

GOSSARY

AC	Aircraft Commander
ADF	Automatic Direction Finder
AFB	Air Force Base
AFMB	Air Force Mission Commander
ALSE	Aviation Life Support Equipment
AM	Amplitude Modulation
AMC	Air Mission Commander
AMU	Aviation ,Management Contract
AR	Air Refueling
AASF	Army Aviation Support Facility
BLM	U.S. Department of Interior, Bureau of Land Management
CAC	Crisis Action Center
CC	Commander
CP	Copilot
CWN	Call when Needed
DES	Montana Department of Emergency Services
DME	Distance Measuring Equipment
DNRC	Montana Department of Natural Resources and Conservation
DO	Director of Operations
DOD	Department of Defense
DSB	Double Side Band. A side band in the high frequency (hf) range
ETA	Estimated Time of Arrival
ETD	Estimated Time of Arrival
FAA	Federal Aviation Administration
FAF	Federal Air Field
FE	Flight Engineer
FM	Frequency modulation
FMC	Fully Mission Capable
FS	U.S. forest Service
GPS	Global Positioning System
HEMTT	Heavy Expandable Mobile Tactical Truck
HIRRS	Hover Infrared Suppression System
HMMWV	High Mobility Multipurpose Wheeled Vehicle
HF	High Frequency
IA	Initial Attack
IAW	In Accordance With
IC	Incident Commander
ICS	Incident Command System
IFR	Instrument Flight Rules

IGE	In Ground Effect This when a helicopter is hovering at a height above the ground that is lower than the equivalent of one rotor diameter and is gaining the benefit of the ground cushion of air under the helicopter. The lower the hover height, the lower the power required to hover.
IHOG	Interagency Helicopter Operating Guide
IP	Instructor
KIAS	Knots Indicated Airspeed
LNO	Military Liaison Officer
LZ	Landing Zone
MHL	Military Helicopter Liaison
MHEM	Military Helicopter Manager can be a CWN or Helicopter Boss
MMC	Military Mission Commander
MO	Aircrew Medic
NCO	Non Commissioned Officer
NPS	US Department of Interior, National Park System
NVG	Night Vision Goggles
OAT	Outside Air Temperature
OGE	Out of Ground Effect. This when a helicopter is hovering at a height above the ground that is higher than the equivalent of one rotor diameter and is not gaining the benefit of the ground cushion of air under the helicopter. The higher the hover height, the higher the power required to hover.
OIC	Officer In Charge
OTAG	Office of the Adjutant General
OPLAN	Operation of Plan of Agreement
PC	Pilot in Command
PFD	Personal Flotation Device
PI	Pilot
SAR	Search and Rescue
SOP	Standard Operating Procedure
TAG	The Adjutant General
USFS	US Department of Agriculture
VFR	Visual Flight Rules
VOR	VHF Omni Directional Range. A radio navigation system for flying IFR Navigation

APPENDIX I

Envelope Letters Annual Changes

TELEPHONE CARD:

AASF FLT OPNS	(406)	324-3055/3056
AASF CDR		324-3035
LANA SEHER		324-3031
SAAO		324-3033
HQ STARC EOC		324-3167/3170
95TH TRP CMND		324-3480/3476

UNIT:	**ORDERLY ROOM**	**SUPPLY**
HHC 1-189th	324-3509	324-3511
CO A 1-189th	324-3516	324-3511
CO D 189th AVUM	324-3520	324-3522
CO H 189th HVY Helicopter	324-3525/3526	324-3527
1022nd MED	324-3530	324-3623

DNRC MAIN OFFICE	444-2074	
HELENA INTERAGENCY DISPATCH	449- 5475	
CHUCK BRENTON DNRC-Air	444 0747	431 0747
TAL WILLIAMS	444-4766	459-3094
ED MARTIN DNRC-Air	444 0789	431 0789
USFS AFD	329 4900	